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ABSTRACT

This study sought to develop a causal model for college persistence based upon students' degree aspirations 4 years into the college experience. It is based on a subset of data from the 1986 and follow-up 1990 Cooperative Institutional Research Program survey, namely 1,473 students attending 261 institutions. The model examined five sets of variables: (1) background characteristics; (2) initial personal commitment, namely degree aspiration and occupational goal upon entering college; (3) institutional characteristics; (4) satisfaction measures; and (5) personal commitment four years after enrolling as a freshman. The results exhibited some validation of the conceptual model which theorized that ability and socioeconomic status, along with measures of satisfaction and commitment 4 years into the college experience, have similar effects as original degree aspirations upon the subsequent measure of aspirations. Differences between male and female students, and students attending public and private institutions, are also considered. An appendix provides data tables and graphic representations of the statistical models. (Contains 43 references.) (MDM)

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ED 391 414

Persistence Based Upon Degree Aspirations

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The purpose of this research was to estimate a causal model for persistence based upon students' degree aspirations four years into the college experience. Data was collected by the Cooperative Institutional Research Program in 1986 and in 1990. Although there were differences in direct effects on each of the models, the results tend to confirm the importance of measuring students' ability and socioeconomic status, original degree aspirations, occupational goals, and satisfaction with opportunities provided by educational institutions in studies of how college affects students degree aspirations, and ultimately, persistence to graduation.

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I would like to express my appreciation to Dr. John Smart, of The University of Memphis, for allowing access to the CIRP data for this study.

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Marriott Hotel, Orlando, Florida, November 2-5, 1995. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Persistence Based Upon Degree Aspirations

With the introduction of scientific inquiry and an economy based on industrial technology, the role of higher education began to change in the mid 1800s. Research methodology and complicated machinery required more highly developed cognitive skills and more specialized knowledge than the simpler agrarian society of the previous centuries. Rapid advances in science and technology invented businesses that required specialized knowledge and skills that would have demanded the equivalence of a university faculty for each business if on-the-job training were to continue, as it had for centuries in the form of apprenticeships. Although record numbers of students have continued to enroll in colleges and universities since the mid 1800s, the degree completion rate over the years has continued to be about 45% (Tinto, 1987).

It is the completion of a degree, particularly a bachelor's degree, that prepares graduates for social status and economic mobility (Blau & Duncan, 1967; Elam, 1983; Sewell, Haller, & Portes, 1969). A number of studies have substantiated the theories of Blau et al. and Sewell et al., but the most extensive findings come from Jencks, et al. (1979) who found in eight independent samples that college graduates earn from 18% to 45% more than non-college graduates. According to their review of literature on college effects on students, Pascarella and Terenzini (1991) concluded that " . . . the bachelor's degree may be the single most important step in the occupational and economic attainment process" (p. 501). Smart (1988) also validated additional earnings from 15 to 30 percent based upon graduate degrees.

Coupling the importance of degree completion on social and occupational status with a student success rate of less than 50% has led to more studies of retention and persistence to graduation than probably any other issue in higher education. Most persistence/retention studies have their theoretical base in Tinto's (1975, 1987) model of integration, Pascarella's (1985) model of change assessment, Bean's (1980, 1982, 1985) model of attrition, or a combination of Tinto's and Bean's theories developed by Cabrera, Castaneda, Nora, & Hengstler (1992), Cabrera, Nora, & Castaneda (1993). Tinto's theory is based on students' successful integration and fit into the social and academic systems through commitment to goals and the institution attended. His

conceptual scheme is longitudinal and refers to three kinds of characteristics: individual, interactive, and institutional. Individual characteristics are students' socioeconomic status, race, gender, ability, high school grades and accomplishments, degree aspirations, and occupational aspirations. Interactive characteristics are college experiences, both academically and socially. Academic integration, according to Tinto, reflects both grades and intellectual development. Social integration, is two-fold: interaction with college peers and interaction with college faculty and administrative personnel. Social interaction is both formal and informal, inside and outside of class. Institutional characteristics of size, type (public or private), selectivity of admission, and instructionally-related expenditures influence students' successful integration, but Tinto did not incorporate the institutional characteristics in his causal model.

Pascarella (1985) refined Tinto's model by placing institutional characteristics of size based on enrollment, faculty-student ratio, selectivity of admission requirements, and the percentage of residential students into his model for analysis assessing change in learning and cognitive development. He categorized these institutional characteristics as exogenous variables that influence students' perceptions of a college environment and engagement in social interaction that will, in turn, influence the students' quality of effort in learning and cognitive development. Tinto's and Pascarella's theoretical models have been validated in numerous studies, especially with traditional-aged students between the ages of eighteen and twenty-six who are enrolled full-time, and more often than not are residents of the college. A few examples are Baumart & Johnstone (1977), Bean (1980), Franklin (1995), Munro (1981), Pascarella, Duby, & Iverson (1983), Pascarella & Terenzini (1983), Pascarella, Smart, & Ethington (1986) and Terenzini & Pascarella (1979).

Bean's theory adds to the work of Tinto by incorporating dimensions outside of the academic community, particularly the relationship with significant others and the additional responsibilities that come with families and work that tend to impede persistence or at least extend the period of time required to complete a degree. An enormously important contribution made by Bean in relation to persistence/retention studies was inclusion of degree aspiration as an

independent variable. Bean's theoretical model has been found to be especially appropriate for non-traditional aged students and underrepresented groups (Bean, J.P. & Metzner, B.S., 1985; Metzner, B.S. & Bean, J.P., 1987).

Underlying degree attainment is, necessarily, persistence to graduation. However, very few studies have used degree aspiration as an outcome, truly measuring persistence to graduation. Since economic and social mobility are dependent in large measure to a college degree, it is unfortunate that so few studies have used degree aspiration as an outcome. Of these few, none have occupational goal as a related variable accompanying degree aspirations. Thistlethwaite (1959, 1960), Thistlethwaite & Wheeler (1966), and Astin (1963) examined degree aspirations of students, but these samples were students of unusual ability and achievement than would be found in the general population of students. Astin & Panos (1969) conducted a study of 246 colleges measuring students' degree aspirations during the first, second, and fourth years of college attendance and found that differences in degree aspirations were influenced not by institutional differences, but by the level of involvement of the students in their college experience. However, regressing 70 independent variables in a stepwise analysis may have eliminated some institutional characteristic variables that otherwise may have been significant. Pascarella (1984) also questioned the absence of theory in Astin & Panos' study. Munro (1981) and Terenzini, Pascarella, Theophilides, & Lorang (1985) used measures of degree aspiration taken upon entrance to college and one year later, but the second measurement was not the outcome variable in their studies.

Building on Astin & Panos (1969), Pascarella (1984) moved the examination of degree aspiration to a different perspective by providing a causal model that includes both institutional environment and student effort measures. Using data collected by the Cooperative Institutional Research Program (CIRP), Pascarella measured 9448 students' degree aspirations from 100 predominately white colleges in 1975 and again in 1977. Separate models were estimated for males and females in private, as well as in public institutions. Parents' education and students' academic aptitude were exogenous variables. There were seven structural equations, using endogenous variables of high school grades, educational aspirations (none to Ph.D.), institutional environment,

college academic achievement, and the outcome variable degree aspiration (none to Ph.D.), measured after two years of college.

Three variables had direct effects on each of the four groups: degree aspirations measured upon entrance to college, college achievement, and institutional environment. Original degree aspiration had almost twice the magnitude of influence than college achievement or institutional environment measures. Pascarella measured college achievement by averaging grades of the two years between 1975 and 1977, and institutional environment with ten items composed of three scales identified as "academic or intellectual competition," "impersonalism and inaccessible faculty," and "conventional or conformist press" (p. 757). His model accounted between 28 and 34 percent of the variance for men' s degree aspirations and between 24 and 38 percent for women (p. 759). Background characteristics had only indirect effects following the paths of original degree aspirations, college academic achievement, and institutional environment; and college environment had indirect effect through the college achievement path. All significant indirect path standardized coefficients reported in this study ranged between -.05 and .06 whereas the direct path standardized coefficients ranged between .18 and .44 (p. 767).

There were a couple of methodological problems with construction of two of the scales for institutional environment. Academic or intellectual competition used "classes are usually informal" in conjunction with three items relating to academic rigor, resulting in a lack of face validity; and "conventional or conformist press" had low internal reliability (.48) that may have deflated some path coefficients. Although selectivity of admission standards did serve as one measure of institutional characteristics, other characteristics suggested in Pascarella's (1985) model of change assessment were not included in the causal model, but were investigated through separate analysis. The significance of this study is both positive and negative in relation to *how college affects students*.

Although college achievement and students' perceptions of the college environment had significant direct effects on degree aspirations, students' degree aspirations upon entering college had twice the impact as the other direct influences--positive information about students who are

more likely to persist to graduation. That the college experience did not have greater influences on students' degree aspirations after two years implied fewer positive college effects than educators would want to believe. Perhaps there was a problem in the selection of measurements for assessing change. Because economic and status mobility is dependent upon degree attainment, as noted earlier, creating a block of variables identified as original goals and a second measure of goals two years into the college experience may provide some additional significant effects on students' desire and commitment to degree attainment.

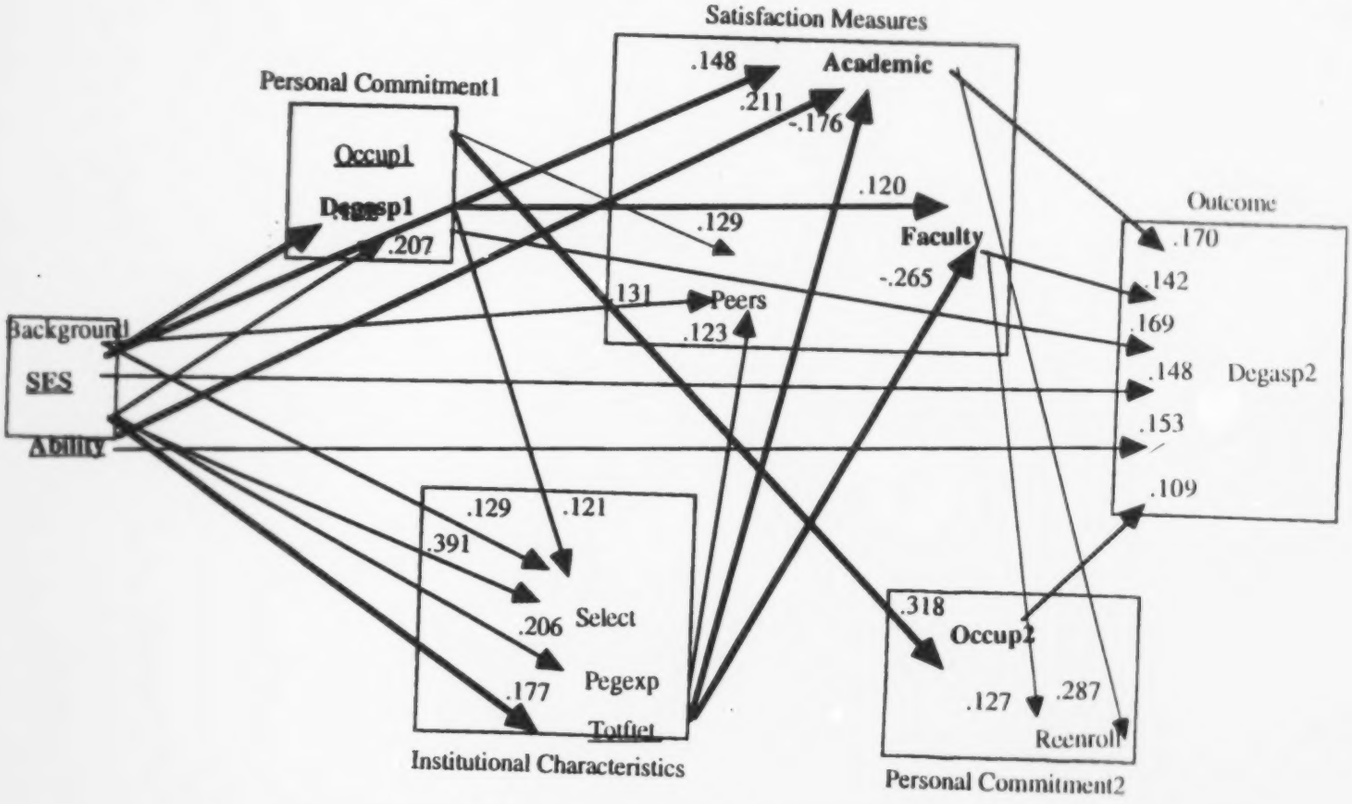
Method

Model

Rather than measuring students' perceptions of an institution's overall atmosphere and environment, measuring students' satisfaction with opportunities to engage in academic and social experiences of an institution might provide more definitive information about the college experience on degree aspirations (Blau, 1973; Pace, 1974; 1979). Having a perception of an environment and the actual experiences within that environment may not be the same, based on students' motivation and quality of effort. Therefore, a different causal model incorporating two measures of personal commitment, one of institutional characteristics, and one of opportunity satisfaction is offered as influences affecting students' degree aspirations. Background variables are exogenous and are assumed correlated. The reasons for their correlations are not part of the analysis of this study. Personal commitment, institutional characteristics, opportunity satisfaction, and the outcome, degree aspirations, measured four years into the college experience, are endogenous. and causally related. Variables within the blocks are correlated but not causally related. Residuals of the variables within the blocks represent the unexplained correlation of the preceding variables. The directional paths in Figure 1 visualize the hypotheses of this study.

Figure A1

Model of Influences Affecting Degree Aspirations of Males in Public Institutions



Note: Significant direct influences are in bold letters; significant indirect influences are underlined and paths are in bold lines.

The model proposed for this study is adapted from both the Tinto and Pascarella models. In particular, the model posits that from the backgrounds that students come from, they develop personal commitments related to educational and occupational outcomes. These, in turn, have an effect on the type of institution that a student attends. Once within the institution, students engage in various social and academic experiences provided, with differing levels of satisfaction with those experiences. This then leads to rethinking initial goals and commitments which directly impact subsequent aspirations. Direct and indirect influences should emanate from background characteristics, personal commitment measures, and satisfaction measures. However, aspirations upon entering college and satisfaction with the academic opportunities should have greater magnitude of impact on degree aspirations than other variables within the blocks of original personal commitment and satisfaction measures. Institutional characteristics should have direct effects on satisfaction measures and personal commitment, but only indirect effects on the outcome. Operational definitions are in Table 1.

Table 1

Definitions of Operational Variables

Variable	Definition
Background Characteristics	
Socioeconomic Status (SES)	A three-category scale indicating students socioeconomic background. It is the sum of both parents' income and educational attainment. Alpha reliability = .71*
Ability	A three-category scale summing students' high school GPA, high school rank, and scores on either the ACT or SAT. Alpha reliability = .82*
Personal Commitment1	
Occupational Goal of Student Upon Entering College in 1986 (Occup1)	A single item,"become an authority in my field," indicating students' commitment to an occupational goal. Coded: 1 "not important" to 4 "essential."
Degree Aspirations in 1986 (Degasp1)	A six level measure of degree aspiration upon entering college as a freshman. (Coded: 1=none to 6=Ph.D. or other forms of a doctorate)

Table1 continued.

Institutional Characteristics	
Selectivity of Admission (Select)	A single item, the sum of the SATV and SATM, used by colleges for admission purposes.
Percentage of College Budget Given to Instructionally-related expenses(Pegexp)	A single item indicating the percentage of a college of university's budget devoted to instructional expenses, including library facility expenses.
Number of Full-Time College Enrollees (Totftet)	A single item indicating the size of a college or university.
Satisfaction Measures	
Academic	A nine-item scale measuring academic integration. The scale is the sum of College GPA, coded from 1="C- or less" to 6=A, and eight questions regarding satisfaction with courses, coded 1 "can't rate" to 5 "very satisfied." Alpha reliability = .74*
Peers	A four-item scale measuring satisfaction with social integration, coded from 1 "can't rate" to 6 "very satisfied." Alpha reliability = .69*
Faculty	A three-item scale measuring students' satisfaction with faculty/staff interactions. Coded from 1 "can't rate" to 6 "very satisfied." Alpha reliability = .86 *
Personal Commitment2	
Occupational Goal Four Years After Entering College (Occup2)	A single item,"become an authority in my field," indicating students' commitment to an occupational goal. Coded: 1 "not important" to 4 "essential."
Reenroll	A single item,"would reenroll in the same college," as a measure indicating commitment to the college or university attended as a freshman.
Outcome	
Degree Aspirations 1990 (Degasp2)	A six level measure of degree aspiration, measured four years after entering college as a freshman. (Coded: 1=none to 6=Ph.D. or other forms of a doctorate)

*Scores were standardized before scales were computed.

Causal Analysis

Regression analyses are often associated with predictive measurement rather than explanation which is necessary in interactive experiences. Theories, or paths, order the relationship of the variables entered into the regression equations, thereby allowing for causal explanations in the interpretation of the statistical procedure. Variables in path analysis are termed exogenous or endogenous. Exogenous variables are correlated and are typically background and/or precollege characteristics. Structural equations are based on the assumptions that exogenous variables directly influence subsequent choices or behaviors, which in turn directly influence further choices or behaviors. There is usually no attempt to analyze the exogenous variables in path analysis, but to accept the theories upon which the models are based. Causal modeling allows the use of regression

to measure both direct and indirect effects of each independent variable on the dependent variable, providing substantively more information and allowing for decomposition of effects. Examination of both direct and indirect effects of the independent variables on the criterion provides more precise and complete information than can come from simple multiple regression. Page (1988) recommends path analysis for nonexperimental studies because it ". . . does not require independent variables to be unrelated," (p. 347) which would be the case in most social research.

Sample

Data was drawn from the Cooperative Institutional Research Program (CIRP), a national survey completed by freshmen in 1986 and again as a follow-up in 1990. Using this data set allows for comparison of two measures on many variables rather than one measurement as found in previous studies. Respondents included four-year students enrolled in both public and private institutions. The survey instrument includes items of information about the students' precollege characteristics, college experiences and concerns, perceptions of development, and satisfaction and engagement with the college experience. The longitudinal study allows for matched comparisons, and the data set also allows for comparisons to very similar, in some instances exact, replications of surveys conducted in earlier years. Comparison of data from independent samples using the same data collection survey allows for replication in testing theory and possibly eliminating some mixed reviews of theory that exist at present. Using the same data collection survey with several independent samples of national proportions also permits analysis of homogeneous and heterogeneous groups.

Respondents included unequal proportions of freshmen from community colleges and four-year colleges and universities, but proportional numbers from private and public institutions. This study was limited to Caucasian, traditional-aged, full-time, single students in four-year colleges and universities because the cell size among variables of race, age, full-time/part-time status, family responsibilities, and institutional type were too extreme to allow for statistical analyses. A final sample from 4000 respondents yielded 1473 students attending 261 colleges and universities: 785

males and 688 females; 804 attending private institutions and 669 attending public institutions. The breakdown of institutional control was 197 private institutions and 64 public institutions.

Variables

The model estimated five sets of variables in the following ordered sequence.

1. Background characteristics: family socioeconomic status and ability.
2. Personal Commitment 1: degree aspiration and occupational goal upon entering college in 1986.
3. Institutional Characteristics: selectivity of admissions, size, and instructional-related expenditures.
4. Satisfaction Measures: satisfaction with academic, social, and faculty interaction opportunities provided by the college or university.
5. Personal Commitment 2: degree aspiration and occupational goal in 1990, four years after enrolling as a freshman.

All of the variables were obtained from the 1986 and 1990 CIRP data. Operational definitions are located in Table 1, including alpha reliability of each computed scale. Attempts were made to compute multiple-item scales for occupational goal and desire to reenroll in the same college again, but the internal reliability was below .60, and, therefore, the decision was made to use single items. Attempts were also made to construct integration scales that included both quality of effort and satisfaction with the academic and social aspects of college. Problems with internal reliability and construct validity prohibited the combination of quality of effort and satisfaction within a scale of measurement; therefore, only satisfaction with opportunity scales were computed.

Analyses

Before the theoretical model was estimated, possible interactive effects of gender and institutional control were analyzed. Adding interaction terms between gender and all other variables resulted in a significant increase in the proportion of variance explained, indicating interactive effects of gender, requiring that the models be estimated separately for males and females. Similarly, significant interactive effects were found for institutional control; thus, the model was

estimated for four groups: males in public and in private institutions and females in public and in private institutions. Diagnostic tests for multicollinearity were also conducted, and the variance inflation factors were all under 2.0, confirming that multicollinearity was not a problem in this study, even though some of the bivariate correlations were relatively large.

The model was estimated using GEMINI (Wolfle & Ethington, 1985), a FORTRAN program based on the theory of Sobel (1982). GEMINI computes direct and indirect effects and their standard errors. Direct effects were estimated by least squares regression (listwise deletion), and indirect effects were estimated by sums of the products of the direct effects through mediating variables in the model. Tables A1 through A4 in the Appendix give the correlation matrix, means, and standard deviations used in the four causal models. The focus of this study revolved around the hypothesized paths illustrated in Figure 1; however, all possible paths were estimated.

Results

The chart below gives the statistically significant direct and indirect effects in unstandardized form by rank order of importance for each of the models estimated.

Significant Influences by Rank by Model

	Males				Females			
	Direct		Indirect		Direct		Indirect	
Public								
	R^2 .262				R^2 .226			
	Academic	.033	Ability	.036	Academic	.052	Ability	.039
	Degaspl	.192	Totftet	-.001	Degaspl	.195		
	Ability	.061	SES	.025	SES	.053		
	SES	.065	Occupl	.060	Occup2	.140		
	Faculty	.051			Reenroll	-.074		
	Occup2	.127						
Private								
	R^2 .263				R^2 .190			
	Degaspl	.240	Ability	.046	Select	.001	Ability	.042
	Occup2	.188	SES	.028	Degaspl	.177	SES	.033
	Ability	.052	Occupl	.067	Faculty	.050		
	Reenroll	.088	Academic	.010	Occup2	.112		
	Faculty	.043						
	Peers	-.032						

Using the variables as operationally defined, the model explained between 22 and 26 percent of the variance on degree aspirations four years into the college experience, which is somewhat less than between 24 and 34 percent reported by Pascarella (1984) two years into the college experience.

Males in Public Institutions

Variance explained in the model for men in public institutions was 26 percent. Directly affecting the outcome were satisfaction opportunities in academics, original degree aspiration, ability, socioeconomic status, satisfaction with opportunities to interact with faculty and administrators, and the second measurement of occupational goal. Differences in magnitude of direct effects in this model were inconsequential.

Significant indirect effects in the model for males in public institutions were ability, size of the college attended, socioeconomic status, and original occupational goal. Academic satisfaction was the mediating variable for ability's and socioeconomic status' indirect influences on the outcome. Opportunities for interaction with faculty/administrators was the mediating variable for the size's (Totftet) negative indirect influence, and the subsequent measure of occupational goal was the mediating variable for the indirect influence of original occupational goal on the outcome.

Males in Private Institutions

Variance explained in the model for men in private institutions was also 26 percent. Directly affecting the outcome were these six variables: original degree aspirations, the second measurement of occupational goal, ability, probability of reenrolling in the same college if students could start all over again, satisfaction with opportunities to interact with faculty/administrators, and satisfaction with opportunities to engage in social activities provided by the college or university. Original degree aspirations had the greater magnitude of effect, twice that of the negative effects of opportunities for academics and faculty interaction, and a one-third greater in magnitude than ability, desire to reenroll in the same institution all over again, and the second measure of occupational goal. The only positive effect of any of the satisfaction measures in this model was ability's influence on academic opportunities.

Significant indirect effects on the outcome degree aspirations for males in private institutions were ability, socioeconomic status, original occupational goal, and satisfaction with academic opportunities. Original degree aspiration was the mediating variable for socioeconomic status' indirect effect; the second measurement of occupational goal was the mediating variable for the original occupational goal on the outcome; satisfaction with academic opportunities was the mediating variable for the indirect effect of ability; and probability of reenrolling in the same college if students' could start all over again was the mediating variable for the indirect influence of satisfaction with academic opportunities.

Females in Public Institutions

Variance explained in the model for females in public institutions was 23 percent. The significant direct effects on the outcome were satisfaction with academic opportunities, original degree aspirations, socioeconomic status, and the second measure of occupational goal four years into the college experience. Satisfaction with academic opportunities had greater impact on this model than any variable in any of the other models. It had twice the magnitude of effect as original degree aspirations, socioeconomic status, and occupational goal four years into the college experience, and about three times the magnitude of effect of probability of reenrolling in the same college if students could start all over again. The only significant indirect effect in this model was ability which was primarily mediated through the negative impact upon this sample of women's second measure of occupational goal.

Females in Private Institutions

Variance explained in the model estimated for females in private institutions was 19 percent. There were four significant direct effects on the outcome: selectivity of admissions' requirements, degree aspirations upon acceptance into college, satisfaction with opportunities for interaction with faculty and administrators, and the measure of occupational goal four years into the college experience. Occupational goal had about half of the magnitude of effect of degree aspirations and selectivity of admissions, and satisfaction with opportunities for interaction with faculty and administrators had almost half the magnitude of effect of degree aspiration and

selectivity. Satisfaction with opportunities for interaction with faculty was the primary mediating variable for ability's significant indirect effect, and selectivity was the primary mediating variable for the significant indirect effect of socioeconomic status.

Comparison of Results

Tinto (1975) hypothesized and Terenzini and Pascarella (1979), as well as Pascarella and Chapman (1983), validated that academic integration directly influenced degree aspirations, and that social integration directly influenced commitment to the institution attended, although there were differences between men and women. Pascarella, Smart, and Ethington (1986), reporting on a nine-year study of two-year college students, found that direct effects influencing persistence for men were academic integration, measured by GPA and membership in an honor society, overall satisfaction with the college attended, and social integration, measured by five these five items: "knew a professor administrator," "president of one or more student organizations," "had a major part in a play," "won a varsity letter," and "edited a school publication" (p. 53). Direct effects influencing persistence for women were academic integration, social integration, and socioeconomic status, measured by the "sum of the parents" combined level of education and income," " concern about financing college," and students' "expectation that he or she would have to work during college" (pp. 51-52).

In this study, satisfaction measures accounted for similar percentages of variance as integration measures in the research mentioned above. Academic satisfaction had significant direct effects in the models estimated for males and females in public institutions. Academic satisfaction had more than twice the magnitude of the other four direct effects for women, whereas for the men, the five direct effects were of relatively the same magnitude of importance. Academic satisfaction had no direct effect on degree aspirations in 1990 among males or females who attended private institutions. However, the total effects of satisfaction with academic opportunities had a significant effect on the outcome. Satisfaction with social opportunities relative to commitment to the institution after enrollment was confirmed by both groups of females, whereas

greater satisfaction with social opportunities had negative influence on reenrollment probabilities for men in private institutions, and no significant effect for the model of men in public institutions.

Background characteristics of ability and socioeconomic status had statistically significant direct and indirect effects on the outcome only in the model estimated for males in public institutions. Ability was the only direct effect of background for males in private institutions, and socioencomonic status was the only direct effect of background characteristics for females in private institutions. Ability and SES were both significant indirect effects in all models except females in public institutions, in which ability was indirectly significant. Direct effects of precollege characteristics on aspiration and degree completion have been mixed. Pascarella (1984) found that background characteristics had no direct influence in any of his four models of men and women in selective and less-selective institutions. Pascarella, Smart, and Ethington (1986) reported that women's socioeconomic status had a significant direct effect on persistence.

Original degree aspirations had similar significant direct effect in all models, but no significant indirect effects on the outcome, confirming the findings of Munro (1981), Pascarella (1984), and Terenzini, Pascarella, Theophilides, and Lorang (1985). Also contrary to the hypothesis, original occupational goal had no significant direct effect on any of the four models, and only significant indirect effect in the two models estimated for men.

Effects for institutional characteristics were direct in relation to satisfaction measures and subsequent personal commitment measures as predicted. The larger the enrollment of the college or university, the more negative the direct influence on satisfaction with academic opportunities and with occasions to interact with faculty. Opportunities for interaction with faculty/administrators were hindered by the size of the institution for all models except females in public institutions. The larger full-time enrollment had negative direct effect on satisfaction with academic opportunities only for males in public institutions, whereas less instructionally-related expenditures had negative direct effect on satisfaction with academic opportunities for men in private institutions. On the other hand, the larger the enrollment, the more satisfied males in public institutions were with opportunities for social engagement, whereas the larger enrollment and higher selectivity had

positive direct effects on males in private institutions in relation to their desire to reenroll in the same college again. These findings tend to validate the quality of effort theory of Pace (1974) who states that it is not so important where we attend college as it is what we do and how satisfied we are with the experience and the perceptions of gains within that college. In their extensive review of higher education studies on *how college effects students*, Pascarella and Terenzini (1991) reported the magnitude of net effect of institutional characteristics was small, and Franklin (1995) suggested that structural characteristics of colleges and universities that are part of Pascarella's model of change assessment be eliminated for a more parsimonious model. Selectivity of admission requirements having a significant direct effect in the model estimated for women in private colleges and universities was a complete surprise. In fact, selectivity had the same magnitude of direct effect on the outcome as original degree aspiration, and was contradictory to previous findings of institutional characteristics' impact, as mentioned above.

The last block of variables, Personal Commitment2, had statistically significant direct effects on the outcome, through the second measure of occupational goal, as predicted, but satisfaction with the college so as to reenroll if students could start all over again had positive significant direct influence only in the model for males in private institutions and negative significant influence in the model for females in public institutions. The subsequent measure of occupational goal had a similar significant direct effect in all four of the models. In all of the models, the original occupational goal had the greatest direct impact on the second measure four years later, as predicted. In both models for men, no other variable had an impact on occupational goal. Lower ability among women in both models had a negative direct influence on their subsequent occupational goal. For women in public institutions, two additional variables influenced their occupational goals four years into the college experience: the negative impact of lower instructionally-related expenditures and the positive influence of peers. Probability of reenrolling in the same institution had significant direct effects on the outcome in two models, females in public institutions, also indirectly mediated through all three of the satisfaction variables.

and males in private institutions, indirectly mediated through academic and faculty variables.

Commonalties among the Models

Common statistically significant direct effects in all four of the models came from the two personal commitment blocks of variables. All comparable effects hereafter reported will be in the They were degree aspirations (Degasp1) upon entering college and a second measurement of occupational goal (Occup2), "becoming an authority in my field," four years after entering college as a freshmen. The range of difference in coefficients of Degasp1 among the models were between .18 and .24, indicating little variation among the four models. Pascarella (1984) reported standardized effects between .39 and .44 of original degree aspirations on a second measurement two years later. Women in public and private institutions had almost identical effects: .18 for women in public institutions and .20 for women in private institutions. Men in private colleges measured .24 compared to men in public colleges of .19. Terenzini, Pascarella, Theophilides, and Lorang (1985) reported similar findings (.22) as this study in relation to measurement of original degree aspirations compared to measurement one year later. Munro (1981) found similar results.

"Becoming an authority in my field," the second common direct effect, also had a small range of difference among the models. Women were about equal in both private and public colleges, .11 and .14, respectively. Contrast of effects for men in private colleges was .19 compared to .13 for men in public colleges. Direct effects estimated from the twelve ordinary least squares regression equations for the four models and tables of direct, indirect, and total effects are provided in Tables A5 through A12 in the Appendix.

One statistically significant indirect effect in all four of the models was ability. Its coefficient was comparable by institutional control and gender: .04 for women in public and private colleges, as well as for men in public colleges; and .05 for men in private institutions. Selectivity of admission's requirement was the mediating variable for ability's indirect effect on the outcome for men and women enrolled in private colleges and universities. Academic integration was the mediating variable for ability as an indirect influence for males in public colleges, and the second measurement of occupational goal (Occup2) was the mediating variable for ability with females in

public colleges and universities. Pascarella (1984) reported that indirect effects of background characteristics were primarily mediated through college achievement in selective as well as less selective institutions. Figures A1 to A4 in the Appendix illustrate the statistically significant direct and indirect effects for model estimate.

Conclusions

Although this study was limited by its very employment of archival data that was not designed to specifically answer questions relating to persistence based upon students' degree aspiration, some important results were forthcoming. The conceptual model theorized that ability and socioeconomic status, along with measures of satisfaction and commitment four years into the college experience would have similar effects as original degree aspirations upon the subsequent measure of aspirations. All of the models exhibited some validation of the conceptual model, and substantiated the importance of measuring students' satisfaction with opportunities tc engage academically and socially with peers and faculty. A better measurement, of course, would be to include both quality of effort and satisfaction measures of the college experience.

Measuring students' occupational goal to become an authority in some field of study was also an important contribution to the study of persistence based on degree aspiration as a motivation for obtaining a degree and becoming economically and socially mobile. There was inconsequential difference among the models in the direct influence original occupational goals had on the subsequent measure, and unfortunately, the model did not include any measures that impacted the second measure of men's occupational goals other than the original commitment. However, lower ability scores had negative impact on the occupational goals of both models estimated for women. Women in public institutions' occupational goals were also negatively impacted by lower instructionally-related expenditures, and positively impacted by satisfaction with opportunities for social engagement. Of course, one wonders if high school course taking patterns had anything to do with these samples of women entering college hoping to enter an occupation for which they have had little preparatory success, or, if while in college, students had satisfactory opportunities *and* engaged in occupational choice counseling with faculty and or administrators.

The over-riding implication of this study suggests the collaborative relationship that must exist between faculty/administrators and students if higher education is to provide economic and social mobility through degree attainment. To facilitate credentialing, both opportunity and satisfaction must be met. Davis and Murrell (1993) referred to this concept as "cocreators of learning" (p.76). For cocreation of learning and satisfaction to occur, students and faculty/administrators should engage in dialogue that enhances knowledge of oneself and one's peers, social interaction for academic discourse in a safe atmosphere that promotes personal and intellectual growth for each, with activities and discussions that hold each accountable for learning and other agreed upon outcomes..

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APPENDIX

Table A1

Correlation Matrix, Means, and Standard Deviations--Males in Public Institutions

	Correlation Matrix														
	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean	SD
1. Degasp2	-													4.838	.978
2. SES	.252	-												-.343	2.259
3. Ability	.281	.178	-											.016	2.461
4. Occup1	.163	-.008	.058	-										2.890	.747
5. Deg1	.309	.159	.229	.257	-									4.864	.860
6. Select	.220	.219	.442	.043	.229	-								1011.780	113.191
7. Totftet	.002	.109	.198	.010	.088	.185	-							17772.765	15459.361
8. Pegexp	-.035	-.126	-.233	-.039	-.111	-.313	-.572	-						78.026	10.752
9. Academic	.355	.202	.267	.066	.187	.210	-.100	.006	-					-1.118	4.938
10. Peers	.210	.189	.195	.162	.189	.168	.206	-.195	.463	-				-.176	2.783
11. Faculty	.293	.086	.083	.110	.150	.043	-.244	.134	.573	.392	-			-.773	2.665
12. Occup2	.173	.053	-.030	.332	.129	.035	.081	-.034	.084	.122	.079	-		2.846	.833
13. Reenroll	.168	.211	.161	.010	.107	.197	.095	-.164	.411	.307	.295	.053	-	3.728	1.360

Table A2

Correlation Matrix, Means, and Standard Deviations--Males in Private Institutions

	Correlation Matrix														
	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean	SD
1. Degasp2	-													5.091	.901
2. SES	.147	-												.303	2.331
3. Ability	.289	.065	-											.300	2.564
4. Occup1	.126	.067	-.016	-										2.870	.848
5. Degasp1	.335	.264	.252	.130	-									5.039	.916
6. Select	.228	.308	.439	.022	.274	-								1057.389	123.769
7. Totftet	.100	.073	.141	-.010	.073	.167	-							5016.909	6897.262
8. Pegexp	-.166	-.116	-.214	-.011	-.154	-.327	-.147	-						77.548	7.312
9. Academic	.282	.034	.272	-.023	.139	.154	.033	-.173	-					.671	5.035
10. Peers	.058	.109	.071	-.150	.025	.126	.106	-.026	.406	-				.095	2.743
11. Faculty	.152	-.037	.025	-.027	-.002	-.081	-.274	.031	.498	.346	-			.665	2.328
12. Occup2	.194	.017	-.048	.326	-.014	-.057	.054	-.035	.047	-.015	.032	-		2.800	.846
13. Reenroll	.228	.014	.166	-.039	.014	.168	.129	-.069	.511	.389	.306	.047	-	3.814	1.290

Table A3

Correlation Matrix, Means, Standard Deviations--Females in Public Institutions

	Correlation Matrix														
	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean	SD
1. Degasp2	-													4.898	.847
2. SES	.197	-												-.585	2.300
3. Ability	.135	.108	-											.176	2.167
4. Occup1	.131	.001	.043	-										2.994	.746
5. Degasp1	.233	.179	.257	.115	-									4.883	.786
6. Select	.169	.313	.357	-.081	.209	-								989.775	101.185
7. Totftet	.059	.213	.153	.094	.108	.167	-							18506.306	16720.535
8. Pegexp	-.055	-.258	-.299	-.076	-.198	-.397	-.573	-						77.336	10.160
9. Academic	.325	.034	.244	.017	.029	.207	.036	-.123	-					-.854	5.147
10. Peers	.162	.116	.152	-.011	.032	.266	.123	-.159	.429	-				-.106	3.104
11. Faculty	.177	-.114	.081	.097	-.046	-.042	-.093	.118	.537	.431	-			-.962	2.670
12. Occup2	.199	.054	-.066	.303	.028	-.061	.032	-.088	.119	.167	.145	-		2.910	.792
13. Reenroll	.023	-.005	.167	-.068	-.040	.149	.087	-.086	.425	.356	.401	-.076	-	3.676	1.313

Table A4

Correlation Matrix, Means, and Standard Deviations--Females in Private Institutions

	Correlation Matrix														
	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean	S.D.
1. Degasp2	-													5.091	.806
2. SES	.190	-												.121	2.491
3. Ability	.200	.086	-											.318	2.272
4. Occup1	.052	-.004	.048	-										2.860	.760
5. Degasp1	.284	.257	.253	.157	-									4.981	.898
6. Select	.258	.354	.469	-.096	.254	-								1045.201	134.729
7. Totftet	.025	.181	.235	.024	.106	.352	-							4371.184	6297.012
8. Pegexp	-.043	-.048	-.239	-.006	-.145	-.312	-.385	-						77.137	8.215
9. Academic	.243	.055	.293	.053	.144	.140	.017	-.027	-					1.520	4.807
10. Peers	.135	.041	.194	.026	.038	.182	.133	-.095	.461	-				.231	2.781
11. Faculty	.187	-.055	.107	.106	-.023	-.082	-.195	.130	.521	.414	-			.806	2.484
12. Occup2	.099	.047	-.141	.291	.046	-.100	-.001	-.050	.005	.013	.007	-		2.695	.864
13. Reenroll	.111	-.008	.170	-.009	.014	.153	.020	-.028	.490	.499	.387	.044	-	3.843	1.266

Table A5

Direct Effects on Degree Aspirations 1990--Males in Public Institutions (N=345)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Degasp2	-										
2. Reenroll	-.014 (-.019)										
3.Occup2	.128* (.109)										
4. Faculty	.052 (.142)	.065* (.127)	.007 (.024)								
5. Peers	-.011 (-.033)	.035 (.073)	.005 (.018)								
6. Academic	.033** (.170)	.079** (.287)	.010 (.061)								
7. Pegexp	.002 (.030)	-.013 (-.108)	.002 (.036)	.008 (.034)	-.016 (-.062)	.007 (.016)					
8. Totftet	.000 (-.001)	.000 (.060)	.000 (.116)	-.000* (-.265)	.000* (.123)	-.000** (-.176)					
9. Select	.001 (.051)	.000 (.065)	.000 (.027)	.000 (.013)	.000 (.030)	.004 (.097)					
10. Degaspl	.192** (.169)	-.021 (-.013)	.034 (.035)	.372* (.120)	.288 (.089)	.593 (.103)	-.582 (-.046)	.069 (.038)	.001* (.121)		
11. Occupl	-.069 (.053)	-.067 (-.037)	.355* (.318)	.277 (.077)	.483* (.129)	.175 (.026)	-.225 (-.015)	-.019 (-.009)	-.001 (-.009)		
12. Ability	.061** (.153)	-.010 (-.018)	-.037 (-.112)	.098 (.090)	.103 (.091)	.423** (.211)	-.903** (-.206)	.111** (.177)	.001** (.391)	.001** (.207)	.001 (.061)
13. SES	.064** (.148)	.059 (.098)	.013 (.037)	.096 (.081)	.162* (.131)	.323** (.148)	-.389 (-.081)	.048 (.071)	.006** (.129)	.001* (.122)	-.001 (-.018)
R^2	.262	.230	.134	.111	.123	.145	.064	.046	.228	.066	.003

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized coefficients are in parentheses.

Table A6

Direct Effects on Degree Aspirations 1990--Males in Private Institutions (N=440)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Degasp2	-										
2. Reenroll	.087* (.125)										
3.Occup2	.188** (.176)										
4. Faculty	.043* (.111)	.048 (.087)	.010 (.029)								
5. Peers	-.032* (-.099)	.085** (.182)	.001 (.004)								
6. Academic	.018 (.101)	.099** (.388)	.009 (.054)								
7. Pegexp	-.004 (-.038)	.007 (.040)	-.005 (-.049)	-.004 (-.014)	.010 (.027)	-.080* (-.116)					
8. Totftet	.000 (.055)	.000** (.114)	.000 (.075)	-.000** (-.276)	.001 (.084)	-.000 (-.021)					
9. Select	.001 (.050)	.001* (.113)	-.001 (-.076)	-.001 (-.084)	.002 (.090)	.001 (.002)					
10. Degasp1	.240** (.244)	-.100 (-.071)	.050 (-.054)	.051 (.020)	-.030 (-.010)	.386 (.070)	-.685 (-.085)	.020 (.026)	.001* (.108)		
11. Occup1	.031 (.029)	.016 (.010)	.334** (.335)	-.079 (-.029)	-.502** (-.155)	-.174 (-.029)	.022 (.002)	-.012 (-.015)	-.400 (-.002)		
12. Ability	.052** (.150)	.004 (.008)	-.011 (-.033)	.084 (.092)	.020 (.019)	.454** (.231)	-.533** (-.187)	.035** (.130)	.001** (.395)	.083** (.234)	-.006 (-.020)
13. SES	.020 (.053)	-.020 (-.036)	.008 (.022)	-.001 (-.001)	.105 (.089)	-.022 (-.010)	.255 (.081)	.017 (.058)	.001** (.253)	.097** (.248)	.024 (.068)
R^2	.263	.326	.125	.085	.053	.092	.062	.024	.281	.124	.004

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized coefficients are in parentheses.

Table A7

Direct Effects on Degree Aspirations 1990--Females in Public Institutions (N=324)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Degasp2	-										
2. Reenroll	-.074 (-.115)										
3.Occup2	.140* (.131)										
4. Faculty	.016 (.051)	.116** (.237)	.012* (.040)								
5. Peers	-.003 (-.011)	.055* (.130)	.039* (.152)								
6. Academic	.051** (.315)	.054** (.215)	.009 (.062)								
7. Pegexp	.011 (.132)	-.000 (-.003)	-.011* (-.141)	.031 (.118)	-.003 (-.012)	-.019 (-.038)					
8. Totftet	.000 (.061)	.000 (.086)	-.000 (-.071)	-.000 (-.033)	.000 (.066)	-.000 (-.032)					
9. Select	.000 (.093)	.000 (.056)	-.001 (-.112)	.000 (.008)	.006** (.227)	.007* (.147)					
10. Degasp1	.195** (.181)	-.102 (-.061)	.013 (.012)	-.181 (-.053)	-.188 (-.047)	-.366 (-.055)	-.001 (-.088)	.069 (.032)	.001 (.194)		
11. Occup1	.071 (.062)	-.163 (-.092)	.308** (.290)	.394* (.110)	.011 (.002)	.185 (.026)	-.001 (.054)	.190 (.084)	-.001* (-.105)		
12. Ability	.006 (.015)	.038 (.064)	-.044* (-.121)	.168* (.136)	.094 (.065)	.476** (.200)	-.001** (-.250)	.092* (.119)	.001** (.308)	.087** (.240)	.014 (.043)
13. SES	.052** (.143)	-.019 (-.033)	.021 (.063)	-.097 (-.084)	.038 (.028)	-.060 (-.027)	-.949** (-.214)	.141** (.194)	.001** (.262)	.052** (.153)	-.001 (.003)
R^2	.226	.268	.155	.050	.082	.081	.152	.071	.220	.089	.001

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized coefficients are in parentheses.

Table A8

Direct Effects on Degree Aspirations 1990--Females in Private Institutions (N=364)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Degasp2	-										
2. Reenroll	.030 (-.047)										
3.Occup2	.112* (.120)										
4. Faculty	.050* (.155)	.057* (.112)	-.010 (-.029)								
5. Peers	-.002 (-.007)	.141** (.310)	.010 (.032)								
6. Academic	.019 (.116)	.075** (.287)	.007 (.040)								
7. Pegexp	.003 (.031)	.001 (.008)	.010 (-.098)	.024 (.081)	-.003 (-.009)	.021 (.036)					
8. Totftet	-.000 (-.047)	-.000 (-.021)	-.000 (-.008)	-.001** (-.186)	.001 (.064)	.001 (-.052)					
9. Select	.001** (.205)	.001 (.108)	-.001 (-.063)	-.001 (-.067)	.002 (.110)	.001 (.014)					
10. Degaspl	.177** (.197)	-.055 (.039)	.020 (.020)	-.118 (-.042)	-.105 (-.033)	.368 (.068)	-.839 (-.091)	.005 (.007)	.001* (.091)		
11. Occupl	-.018 (-.017)	-.044 (-.026)	.329** (.289)	.330 (.101)	.124 (.033)	.198 (.031)	.202 (.018)	.010 (.012)	-.002** (-.129)		
12. Ability	.012 (.043)	-.006 (-.014)	-.054** (-.173)	.189** (.207)	.135* (.132)	.505** (.286)	-.651 (-.216)	.050** (.218)	.002** (.425)	.076** (.232)	.013 (.048)
13. SES	.022 (.069)	-.027 (-.053)	.024 (.071)	.001 (.001)	.014 (-.012)	.036 (.018)	-.018 (-.005)	.040** (.160)	.001** (.293)	.085** (.236)	-.002 (-.008)
R^2	.190	.353	.124	.086	.054	.096	.065	.08	.34	.12	.002

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized coefficients are in parentheses.

Table A9

Direct, Indirect, and Total Effects on Degree Aspirations 1990--Males in Public Institutions (N=345)

Variable	Direct Effects	Indirect Effects	Total Effects
SES	.065** 4 (.149)	.025* 3 (.059)	.090 (.208)
Ability	.061** 3 (.154)	.036** 1 (.091)	.097 (.245)
Occupl	.070 (.053)	.060* 4 (.049)	.130 (.099)
Degaspl	.192** 2 (.169)	.046* 5 (.040)	.238 (.209)
Select	.000 (.052)	.001 (.019)	.001 (.071)
Totftet	.000 (-.001)	.001* 2 (-.060)	.001 (-.061)
Pegexp	.003 (.030)	.001 (.016)	.004 (.046)
Academic	.033** 1 (.170)	.001 (.002)	.034 (.172)
Peers	-.011 (-.032)	.001 (.001)	-.012 (-.033)
Faculty	.051* 5 (.142)	.001 (.001)	.052 (.143)
Occup2	.127* 6 (.109)	.001 (.000)	.128 (.109)
Reenroll	-.013 (-.019)	.001 (.001)	-.014 (-.020)

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized effects are in parentheses, and numbers to the right of effects are rank ordering of significant effects.

Table A10

Direct, Indirect, and Total Effects on Degree Aspirations 1990--Males in Private Institutions (N= 440)

Variable	Direct Effects		Indirect Effects		Total Effects
SES	.021 (.053)		.028** (.075)	2	.049 (.128)
Ability	.052** (.150)	3	.046** (.130)	1	.098 (.280)
Occupl	.031 (.029)		.067** (.063)	3	.098 (.092)
Degaspl	.240** (.244)	1	.006 (.006)		.246 (.251)
Select	.002 (.050)		-.001 (-.016)		.001 (.034)
Totftet	.000 (.055)		.000 (-.018)		.000 (.037)
Pegexp	-.005 (-.038)		-.003 (-.026)		-.008 (-.064)
Academic	.018 (.101)		.010* (.059)	4	.028 (.160)
Peers	-.032* (-.099)	6	.008 (.024)		-.024 (-.075)
Faculty	.043* (.111)	5	.006 (.016)		.049 (.127)
Occup2	.188** (.176)	2	.000 (.000)		.188 (.176)
Reenroll	.088* (.126)	4	.000 (.000)		.088 (.126)

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized effects are in parentheses, and numbers to the right of effects are rank ordering of significant effects.

Table A11

Direct, Indirect, and Total Effects on Degree Aspirations 1990--Females in Public Institutions (N=324)

Variable	Direct Effects		Indirect Effects	Total Effects
SES	.053**	3	.015	.068
	(.143)		(.041)	(.184)
Ability	.006		.039**	.045
	(.015)		(.099)	(.114)
Occup1	.071		.051	.122
	(.062)		(.044)	(.106)
Degasp1	.195**	2	-.007	.188
	(.181)		(-.007)	(.174)
Select	.001		.000	.001
	(.093)		(.021)	(.114)
Totftet	.000		.000	.000
	(.061)		(-.030)	(.031)
Pegexp	.011		-.003	.008
	(.132)		(-.026)	(.106)
Academic	.052**	1	-.003	.049
	(.315)		(-.016)	(.299)
Peers	-.003		.001	-.001
	(-.011)		(.001)	(-.010)
Faculty	.016		-.007	.009
	(.051)		(-.022)	(.029)
Occup2	.140*	4	.001	.140
	(.132)		(.001)	(.131)
Reenroll	-.074*	5	.001	-.074
	(-.116)		(.001)	(-.115)

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized effects are in parentheses, and numbers to the right of effects are rank ordering of significant effects.

Table A12

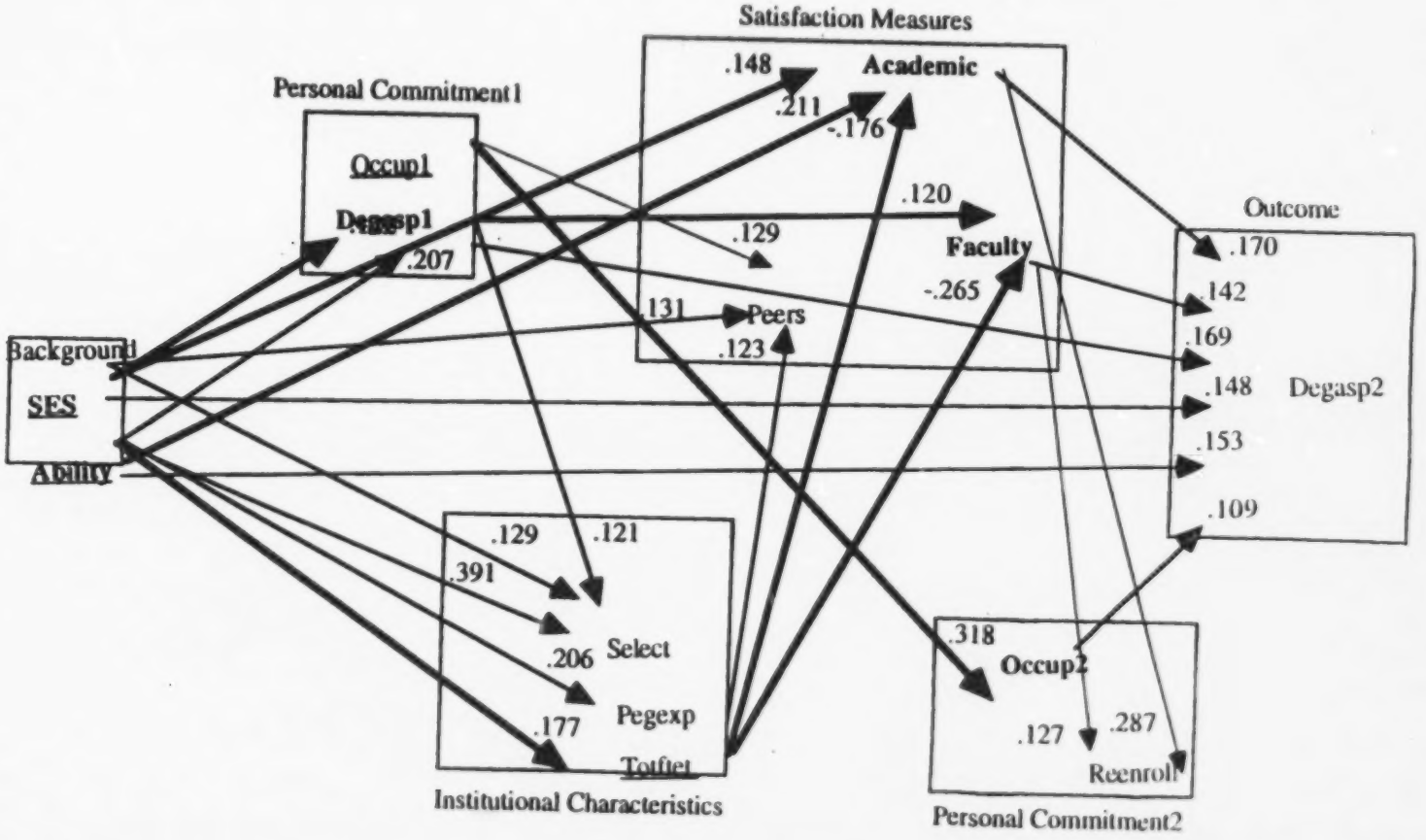
Direct, Indirect, and Total Effects on Degree Aspirations 1990--Females in Private Institutions (N=364)

Variable	Direct Effects	Indirect Effects	Total Effects
SES	.023 (.069)	.033** 2 (.104)	.056 (.173)
Ability	.012 (.043)	.042** 1 (.145)	.054 (.185)
Occup1	-.018 (-.017)	.031 (.029)	.013 (.012)
Degasp1	.177** 2 (.197)	.016 (.018)	.193 (.215)
Select	.001** 1 (.205)	.000 (-.023)	.001 (.182)
Totftet	.000 (-.047)	.000 (-.034)	.000 (-.081)
Pegexp	.003 (.031)	.001 (.003)	.003 (.034)
Academic	.019 (.116)	-.001 (-.008)	.018 (.108)
Peers	-.002 (-.007)	-.003 (-.010)	-.005 (-.017)
Faculty	.050* 3 (.155)	-.003 (-.008)	.047 (.147)
Occup2	.112* 4 (.120)	.000 (.000)	.112 (.120)
Reenroll	-.030 (-.047)	.000 (.000)	-.030 (-.047)

* Statistically significant p > .05
** Statistically significant p > .01
Note: Standardized coefficients are in parentheses, and numbers to the right of effects are rank ordering of significant effects.

Figure A1

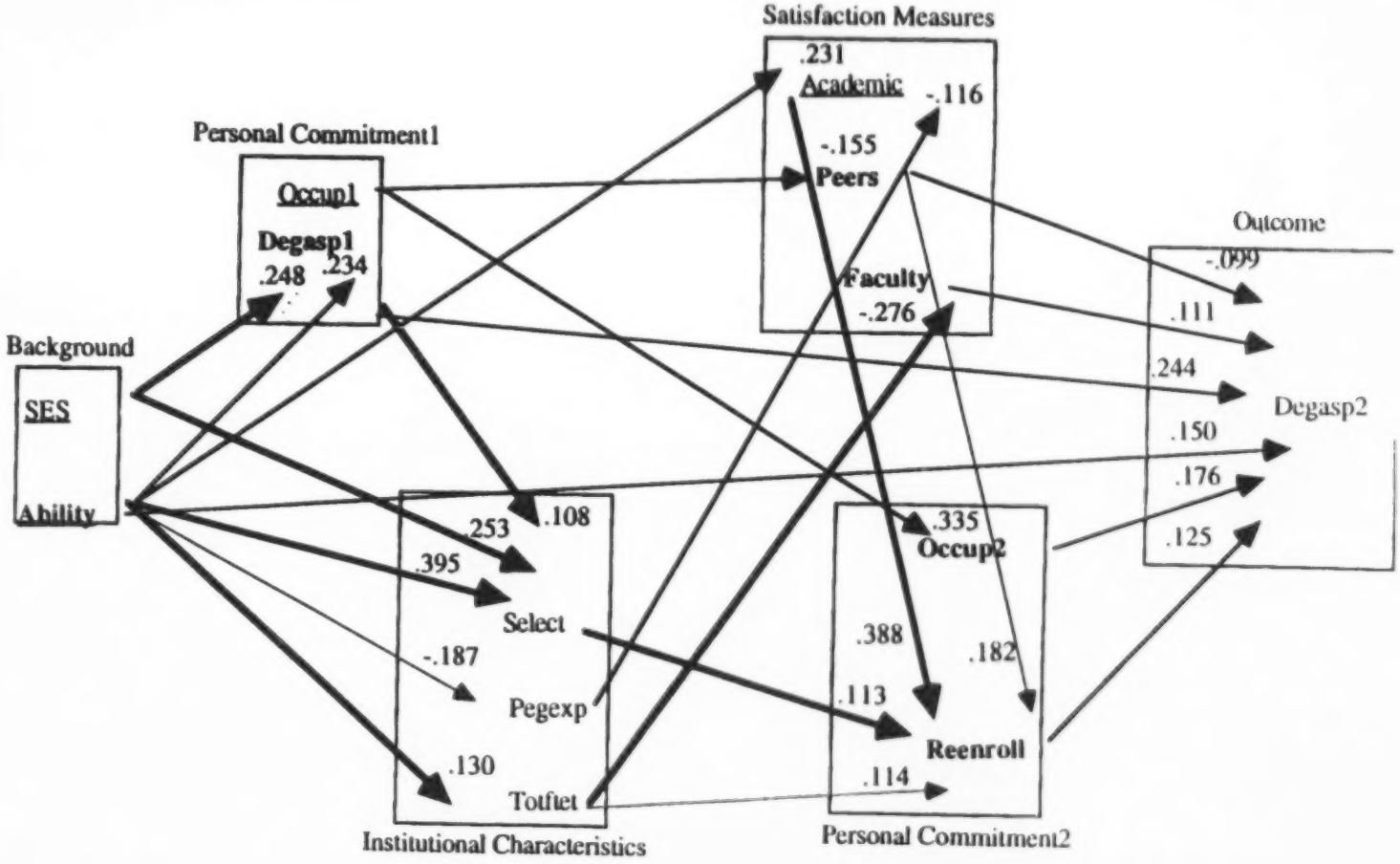
Model of Influences Affecting Degree Aspirations of Males in Public Institutions



Note: Significant direct influences are in bold letters; significant indirect influences are underlined and paths are in bold lines.

Figure A2

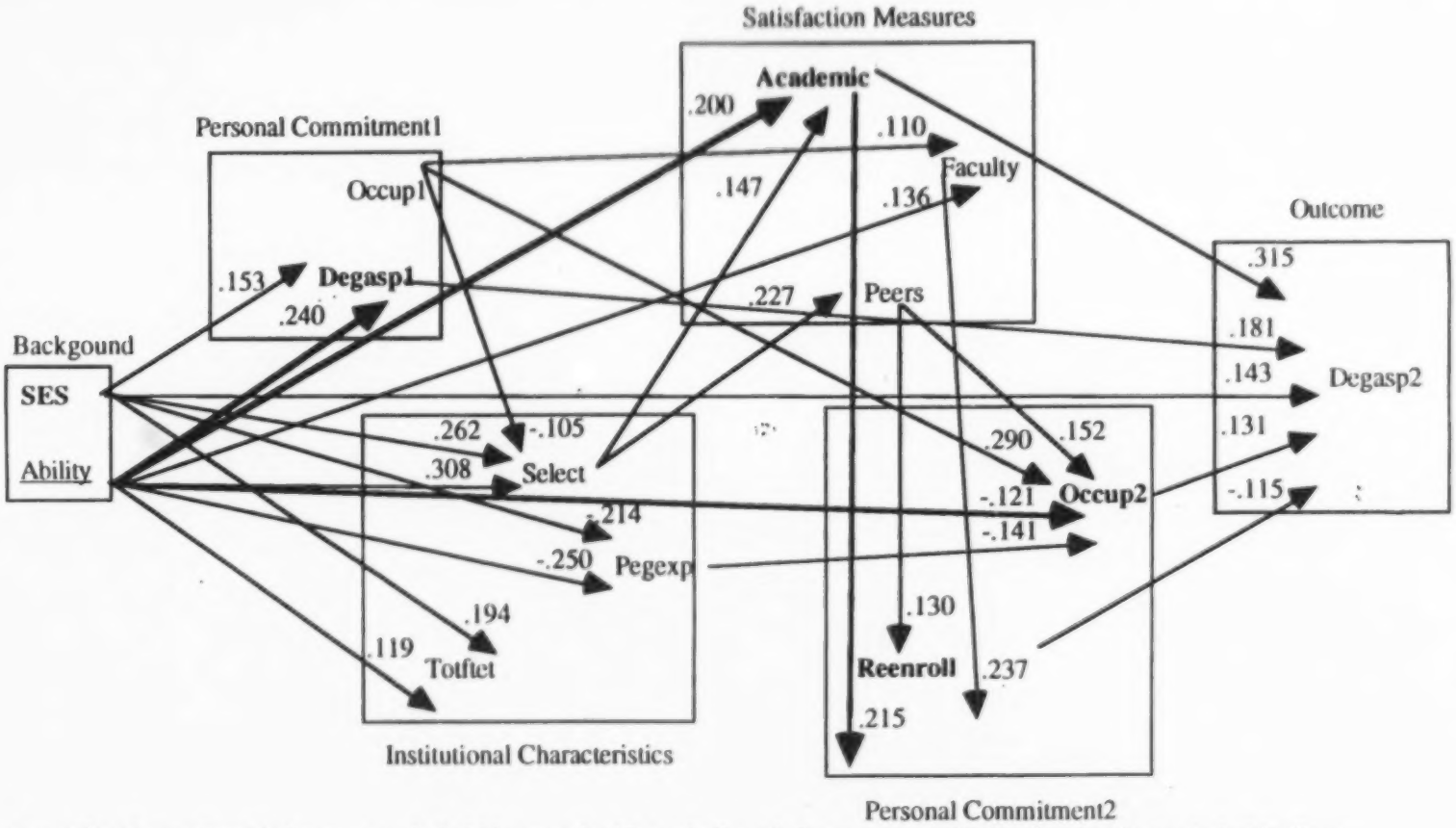
Model of Influences Affecting Degree Aspirations of Males in Private Institutions



Note: Significant direct influences are in bold letters; significant indirect influences are underlined and paths are in bold lines.

Figure A3

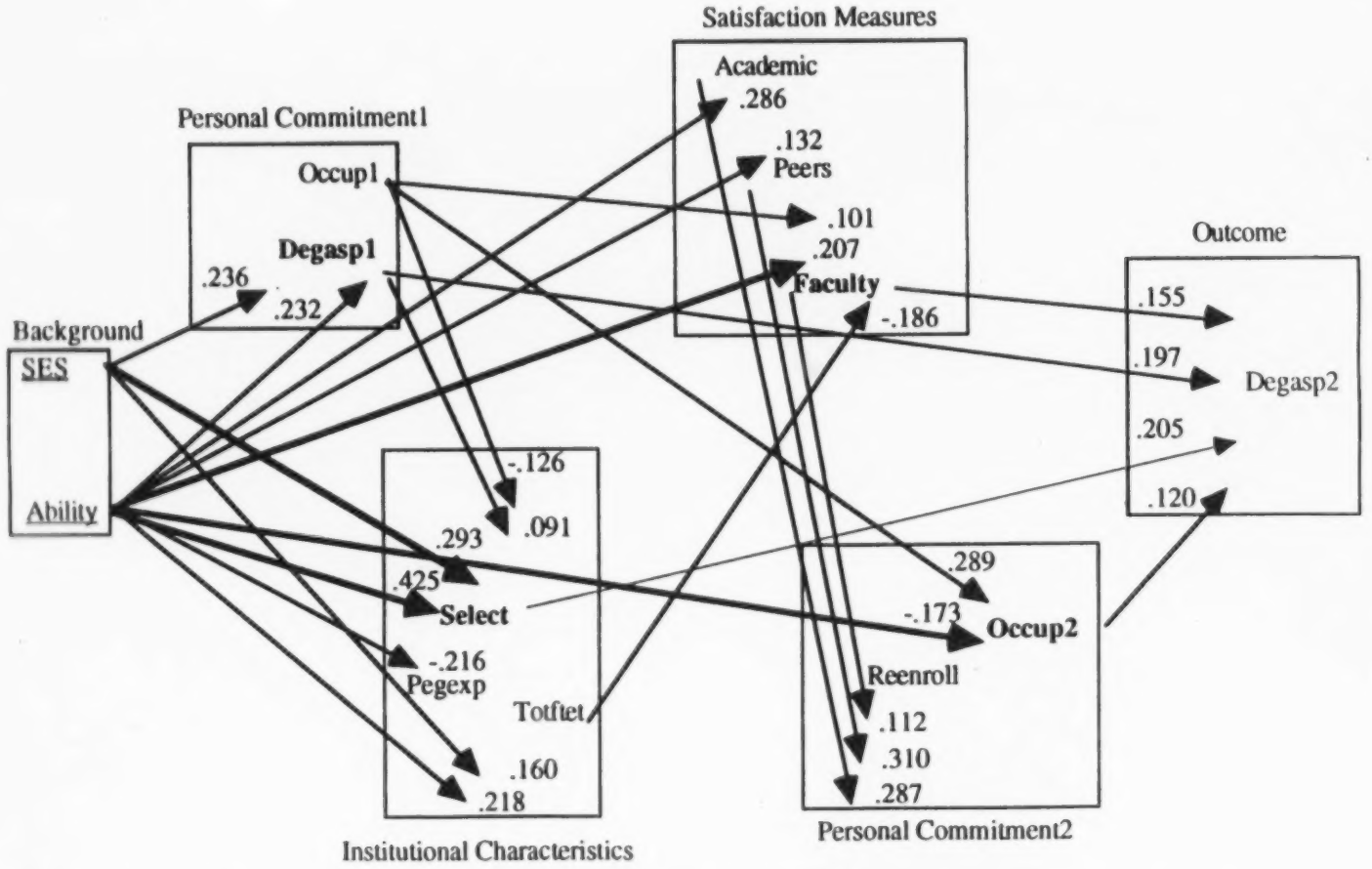
Model of Influences Affecting Degree Aspirations of Females in Public Institutions



Note: Significant direct influences are in bold letters; significant indirect influences are underlined and paths are in bolder lines.

Figure A4

Model of Influences Affecting Degree Aspirations of Females in Private Institutions



Note: Significant direct influences are in bold letters; significant indirect influences are underlined and paths are in bold lines.